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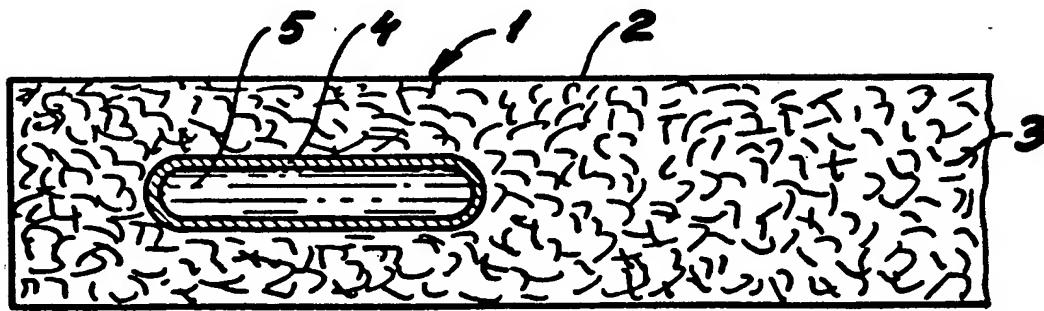
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(54) Title: SELF-EXTINGUISHING CIGARETTE



OCT 15 1986

(57) Abstract:

A self-extinguishing cigarette comprising a tubular outer wrapper surrounding a tobacco rod or column is provided with a non-collapsible elongated ampoule, which will break, soften, fuse or burn when exposed to heat, containing a non-inflammable liquid medium in a sufficient amount to extinguish the glow in the cigarette when liberated from the ampoule and arranged coaxially at the mouth end and within the body of the cigarette.

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## S lf-extinguishing cigarett

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The invention relates to a self-extinguishing cigarett .

It is well-known that a discarded smouldering cigarette can be unpleasant and dangerous because the cigarette may continue to smoulder and burn after the smoking has been discontinued.

10

The unpleasant aspects consist primarily in bad smell and odour produced during the slow burning of the discarded cigarette. The dangerous aspects consist in different types of serious fire hazards. Smouldering ciga-

15 rettes in ashtrays have caused numerous fires which have resulted in complete destruction of buildings, ships, etc., e.g. when ashtrays with still smouldering cigarettes have been emptied in containers containing inflammable materials; and smouldering cigarettes discarded on the ground have caused numerous large and devastating fires in forests and fields.

These inconveniences and hazards could be eliminated or at least minimized if it was possible to provide

25 a reliable self-extinguishing cigarette, which in the present context is defined as a cigarette having the ability of extinguishing itself at the moment when the glow arrives at a predetermined position on its way towards the mouth end of the cigarette. A further advantage of a self-extinguishing cigarette consists in the possibility of arranging the extinguishing position at such a point that it is impossible to smoke the last part of the cigarette, which is known as being the most dangerous, seen from a medical point of view.

35

In GB patent specification n n . 245,329 it has b n pr -

pos d t pr vide a self-extinguishing cigarett comprising an encircling band r bands located int rmediat its ends and tr ated chemically or by c nstricti n, r both, for the purpose of extinguishing the slow burning or smouldering of the cigarette when the smoking thereof is discontinued, whilst permitting the proper burning of the cigarette when smoked in the usual way.

However, this solution cannot be considered satisfactory, 10 partly because of unreliability, partly because the chemically treated bands will cause formation of unacceptable gases with bad or strange taste when exposed to the glow during or after smoking.

15 Cigarette filters containing a single or a plurality of collapsible capsule(s) or ampoule(s) filled with water or other liquids are known, e.g. from US patent specification no. 3,428,049 and DK patent specification no. 125,566. The water or liquid contained in these 20 capsules or ampoules is released by applying a squeezing pressure to the outer wrapper of the filter, thereby breaking the collapsible capsule or ampoule. According to this part of the known art, the purpose of releasing the water or the liquid in the filter is to improve 25 the effect of the filter and if desired to augment or supplement the flavour of the smoke.

The safe functioning of such filters is however endanger d by untimely breaking of the collapsible capsules or 30 ampoules, e.g. during the production of the filter; when the filters are arranged in the cigarettes; and during packaging and transport of the cigarettes from factory t us r.

35 The object f the pres nt inv ntion is t pr vid a reliabl self- xtinguishing igarett , as defin d ab ve.

which does not exhibit any of the above mentioned drawbacks.

This is achieved according to the present invention

5 by a self-extinguishing cigarette comprising a tubular outer wrapper surrounding a tobacco rod or column, which is characterized by comprising a non-collapsible elongated ampoule, which will break, soften, fuse or burn when exposed to heat, containing a non-inflammable liquid

10 medium in a sufficient amount to extinguish the glow in the cigarette when liberated from the ampoule and arranged coaxially at the mouth end and within the body of the cigarette.

15 During smoking of the cigarette according to the present invention the glow will move down towards the ampoule, which will break, either directly by the action of the heat of the glow or indirectly by a pressure increase in the liquid medium, thus causing release of the liquid

20 medium, preferably water or an aqueous solution, contained in the ampoule. The released water or liquid will then rapidly extinguish the glow, i.e. the cigarette, without any conscious action from the smoker being needed.

25 Since the non-collapsible construction of the ampoule ensures that it will not break when the cigarette is subjected to a normal squeezing pressure, i.e. a pressure less than what would destroy the cigarette in any case, there is no risk of untimely release of the water or

30 liquid contained in the ampoule.

The ampoule is preferentially formed from a material, which will fuse or soften by the action of heat from the glow, and which does not produce noxious gases or

35 any smell or taste when exposed to heat. Polythylene and polypropylene are examples of such preferred materials.

Preferably the ampoule has a length of about 10-25 mm, an external diameter of about 1.5 - 4 mm and an internal diameter of about 0.5 - 3.5 mm. Such ampoules can easily be manufactured by spot sealing a corresponding tube

5 filled with water or liquid.

If desired, the water or the liquid may be kept at a moderate pressure within the ampoule.

10 The water or the liquid contained in the ampoule may contain additives, such as surfactants or other useful components, e.g. components augmenting or supplementing the flavour of the smoke, such as menthol or lemon oil.

15 Regardless of the composition and nature of the liquid in the ampoule, it should be present in a sufficient amount to extinguish the glow in the cigarette. In case of water less than 0.03 ml will generally suffice.

20 According to a preferred embodiment of the invention the ampoule is formed with a first end wall facing the glow and an opposite second end wall facing the mouth end of the cigarette, said first end wall being thinner than said second end wall.

25

The cigarette according to the present invention may also be provided with a filter element facing the tobacco rod or column. In this case the ampoule may be embedded partly in the filter element, partly in the tobacco

30 rod, or it may be entirely embedded in the tobacco rod.

In the drawings

fig. 1 is a longitudinal cross-sectional view of the embodiment of the cigarette according to the invention, without filter tip;

fig. 2 is a longitudinal cross-sectional view of another embodiment of the cigarette according to the invention, with filter tip; and

5 fig. 3 is a longitudinal cross-sectional view of a filter element containing an ampoule.

As shown in fig. 1 a cigarette 1 without filter comprises an outer wrapper 2 surrounding a tobacco rod or column 10 3 containing an ampoule 4 containing water 5 arranged at the mouth end of the cigarette.

The filter cigarette 1 shown in fig. 2 comprises an outer wrapper 2 surrounding a tobacco rod or column 15 3 facing a filter rod 6. In this case the ampoule 4 is embedded partly in the filter rod 6, partly in the tobacco rod 3.

If it is desired to provide a filter cigarette, which 20 will extinguish when the glow is further away from the filter, the ampoule may be embedded totally in the tobacco rod.

Fig. 3 shows a filter element 7 which may be used in 25 the manufacture of the cigarette shown in fig. 2. This filter element 7 comprises a filter rod 6 and an ampoule 4 partially embedded therein. The illustrated ampoule 4 is formed with a thin end wall 8 facing the glow and an opposite end wall 9 having normal thickness and facing 30 the mouth end of the filter.

P A T E N T   C L A I M S

1. A self-extinguishing cigarette comprising a tubular outer wrapper surrounding a tobacco rod or column,  
5   characterized by comprising a non-collapsible elongated ampoule, which will break, soften, fuse or burn when exposed to heat, containing a non-inflammable liquid medium in a sufficient amount to extinguish the glow in the cigarette when liberated from the ampoule  
10 and arranged coaxially at the mouth end and within the body of the cigarette.
2. A self-extinguishing cigarette according to claim 1,  
15   characterized in that the liquid medium is water or an aqueous solution.
3. A self-extinguishing cigarette according to claims 1 - 2,  
20   characterized in that the ampoule is shaped with a first end wall facing the glow and an opposite second end wall facing the mouth end of the cigarette, said first end wall being thinner than said second end wall.  
25
4. A self-extinguishing cigarette according to claims 1 - 3,  
characterized in that the ampoule has a length of about 10 - 25 mm, an external diameter of  
30   about 1.5 - 4 mm, and an internal diameter of about 0.5 - 3.5 mm.
5. A self-extinguishing cigarette according to claims 1 - 4,  
35   characterized in that the ampoule is formed of a plastic material which will soften, fuse or burn

when exposed to heat without lib rating noxious or smelling gases.

6. A self-extinguishing cigarette according to claim 5,  
5 characterized in that said plastic material  
is polyethylene or polypropylene.

7. A self-extinguishing cigarette according to claims  
1 - 6,  
10 characterized in that said cigarette is  
provided with a filter element facing the tobacco rod  
or column and that the ampoule is embedded partly in  
the filter element, partly in the tobacco rod.

15 8. A self-extinguishing cigarette according to claims  
1 - 6,  
characterized in that said cigarette is  
provided with a filter element facing the tobacco rod  
or column and that the ampoule is entirely embedded  
20 in the tobacco rod.

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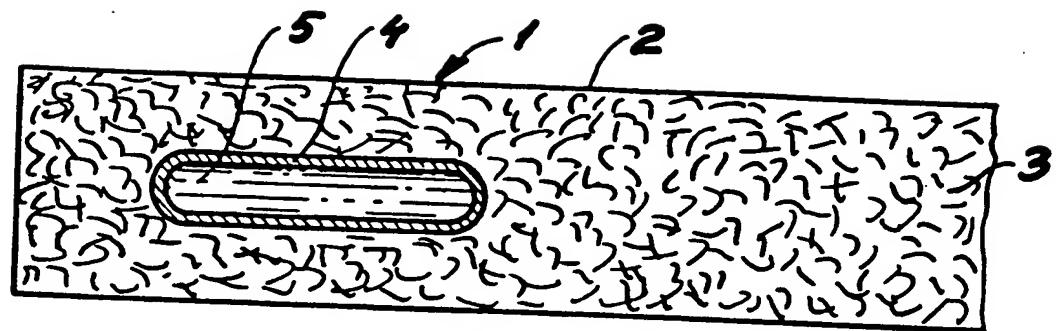


Fig.1

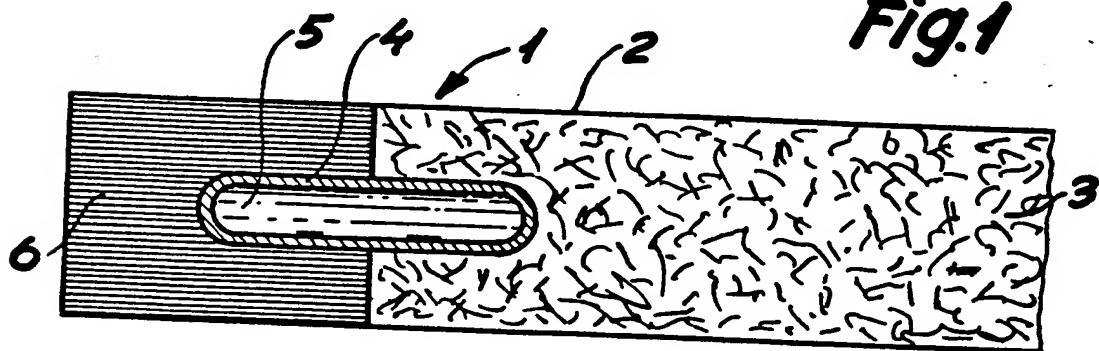


Fig.2

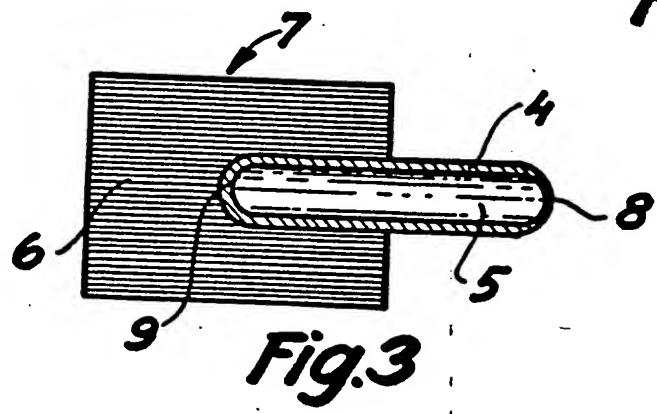


Fig.3

# INTERNATIONAL SEARCH REPORT

International Application No

PCT/DK86/00013

## I. CLASSIFICATION & SUBJECT MATTER (if several classification symbols apply, indicate all)

According to International Patent Classification (IPC) or to both National Classification and IPC

**A 24 D 1/10**

## II. FIELDS SEARCHED

Minimum Documentation Searched

Classification System	Classification Symbols
IPC 2	A 24 C 5/50
IPC 4	A 24 D 1/00, /06, /10
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SE, NO, DK, FI classes as above

## III. DOCUMENTS CONSIDERED TO BE RELEVANT\*

Category	Citation of Document, <sup>11</sup> with indication, where appropriate, of the relevant passages <sup>12</sup>	Relevant to Claim No. <sup>13</sup>
X, Y	US, A, 3 985 143 (JAMES B LAPPIN JR) 12 October 1976	1-8
X	US, A, 1 726 737 (E M HARRIS) 30 December 1927	1-8
Y	US, A, 4 436 101 (WILLIAM SEATTS) 13 March 1984	1-8
Y	US, A, 4 226 249 (MARION A NEWMAN) 7 October 1980	1-8
Y	DK, B, 125 566 (THE H-2-O FILTER CORPORATION, NEW YORK, USA) 12 March 1973	1-8
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## IV. CERTIFICATION

Date of the Actual Completion of the International Search

**1986-04-21**

International Searching Authority

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Date of Mailing of this International Search Report

**1986-05-13**

Signature of Authorized Officer

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